Evaluation of the results of paired opposite clear corneal incisions on steep meridian during phacoemulsification in preoperative astigmatism.

ABSTRACT

Background and Objective: *Astigmatism may cause blurred vision, glare sensation, monocular diplopia, asthenopia and visual aberrations. Correction of astigmatism is one of the main purposes of modern cataract surgery. Various methods are used to correct astigmatism at the time of cataract surgery. One of the newest and most effective methods is paired opposite clear corneal incisions on steep meridian (OCCI). In previous studies, OCCI was performed with incisions of 2.8 mm to 3.2 mm. The purpose of this study is to evaluate the effect of clear corneal incisions on steep meridian with 4mm incisions on pre-operative astigmatism for the first time in the world .*

Methods*: This quasi-experimental study was performed on 64 eyes of 55 patients with corneal astigmatism of ≥1D undergoing phacoemulsification without suture. Steep meridian of cornea was marked preoperativly. Patients were divided into two groups according to the type of astigmatism, With the rule astigmatism (WTR) and Against the rule astigmatism (ATR). initial Incision in WTR group was performed on temporal side with 3.2 mm keratome and paired stap incisions performed on steep meridian . at the end of surgery, on axis incisions enlarged to 4 mm. In ATR group main 3.2 mm incision, was performed on steep meridian and two stap insicions performed Perpendicular to the steep axis, at the end of surgery paired incisions on steep meridian enlarged to 4 mm. Follow-up visits were scheduled 1, 3, 6 and 12 months postoperatively, which included refraction and keratometry. vector analysis was used for comparing pre and postoperative stigmatism. The results were analysed with spss.21 using variance (ANOVA) T.paired and t.undepended tests with significance level set at 0.05.*

Results: *mean preoperative refractive astigmatism was 2.06±0.86 Diopter (D). post operative mean refractive astigmatism was 1.3±0.8 D after 1 month and 1.2±0.7 D after 12 month. Mean astigmatism correction between preoperative and 1 month was 0.76 D and statistically significant (p=0.001) but there was no significant change in the severity of astigmatism afterwards. Mean surgically induced astigmatism (SIA) was 1.99±0.9 D. astigmatism 12 month changes was 1.06±0.7 D in With the rule group (WTR) and 0.7±0.53 D in Against the rule group (ATR). The difference between the two groups was statistically significant.(p=0.02) This is mainly due to the higher prevalence of astigmatism over-correction in ATR group and its conversion to group WTR group and There was no significant difference in postoperative SIA between the two groups.*

Conclusion: *Paired OCCI on the steep axis with 4 mm incisions is a useful technique to correct moderate to severe pre-operative astigmatism and depending on the type of astigmatism, its effect varies.*

Key words: *Astigmatism, Phacoemulsification, Cataract, Opposite clear corneal incisions.*